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Picture it in

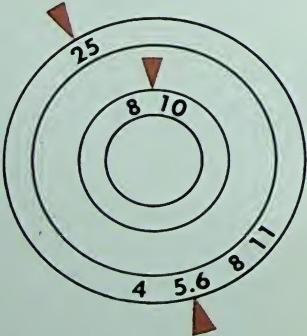
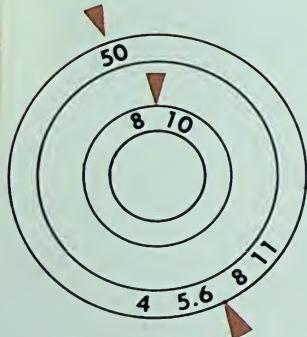
stereo



a Kodak publication

EASY STEREO SNAPSHOTS

Two simple recipes for
Kodachrome pictures —



OUTDOOR SNAPSHOTS

- Film: Kodachrome, Daylight Type
Focus: Set at GROUPS (9 feet)
Opening: Set at "Bright" (halfway between f/5.6 and 8)
Shutter: Set at 50 (1/50th sec.)

Hold camera level and steady;
squeeze shutter button slowly.

INDOOR SNAPSHOTS

- Film: Kodachrome, Daylight Type
Focus: Set at GROUPS (9 feet)
Opening: If 6 ft. away, set at f/8
and If 9 ft. away, set at f/5.6
Distance: If 12 ft. away, set at f/4
Shutter: Set at 25 (1/25th sec.)

Fire with camera level and steady.

Just Two recipes—one for outdoors, one for indoors! And, it's really all you need! Yes, you can shoot all your stereo color pictures by merely following these simple rules—and, if you do, all your pictures should be reasonably good. But, you'll miss lots of fun, and lots of good pictures, too, if you limit yourself this way. Your camera can do more—and better. So can you. This book will show you the way. (Incidentally, if you use Kodak Ektachrome Film, you'll find directions for that inside.)

Subjects: Family fun, gardening, car washing, chores, pets, etc.

Light: Sunlight shining on your subject.

Viewpoint: Shoot with sun shining over your shoulder.

Distance: Stand 6 to 25 feet away.



Subjects: A birthday party, or any family happening—like this.

Light: Flash. Disregard other light.

Viewpoint: Shoot from any angle.

You also need: Flash unit on camera, with 5B or 25B flashlamp.



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So you want to know about **STEREO!**

- No wonder! A stereo color picture is so alive! When you look at a stereo picture in your viewer, you seem to be looking through the stereo window at a little bit of yesterday. You're back there again, seeing your children, your friends, the scenery . . . almost as real as on that day you tripped the shutter.

But, there are many reasons why you will like stereo! A modern stereo camera, such as the Kodak Stereo Camera, is simple to use . . . so simple it will surprise you. It gives you three dimensions in color with snapshot ease. Most people like that! They like, too, the way stereo can answer long-felt needs in science, and business . . . including monkey business!

This is a practical book where we talk to you in how-to-do-it terms. Strictly speaking, it's a book about stereo photography with Kodak color films exposed in a Kodak Stereo Camera. But, actually, most of what we say here will work with any good stereo camera.

Of course, you will want to understand *what* you are doing, and you may even want to understand *why*. And, of course, that means we will have to do some explaining as we go along. But, we promise not to get too technical, and we have paved your road with maps, diagrams, cartoons, and pictures.

Now, let's see how easy it really is. Let's take some pictures!

4 KEYS TO GOOD STEREO PICTURES



Every time you see a really top-notch, stereo, color picture, you can count on this: It will be

LEVEL, SHARP, COLOR-FULL, AND INTERESTING

These four word-keys fit nearly every good stereo picture. So, let them key your thoughts — reminding you of these four elements of a good stereo picture. Keeping them in mind will help you develop the habits of good shooting. Once you have those habits, picture taking will be more fun. Why? Because you'll do the right things almost automatically, and get wonderful pictures without really trying.



LEVEL

Keep your camera level when you take a stereo picture. Don't cock your head (and camera) to one side so one lens is lower than the other. (Do that, and you'll get hard-to-view slanting pictures.) *Camera level!* That's a good rule, but even a good rule can well be broken sometimes. For details on level pictures, turn to page 6.

SHARP

When you look at a stereo picture, your eyes love to wander everywhere from near to far. If anything important looks fuzzy, your eyes object. A fuzzy stereo picture is usually only an example of what not to do again. And rightly so! Sharp pictures are so easy — just focus your camera right, and hold it steady. You can find how to do both on page 6.

COLOR-FULL

Wouldn't you like to pack your pictures with color — color as vivid and rich as in the scene itself? Of course you would! And you can, too, just by making sure that the right amount of light reaches the film in your camera. It's as simple as that.

How do you do that? With the lens and shutter of your camera. You measure out the light to the color film in your camera by the way you set the lens opening and shutter speed. You can read just how to set them both by turning to the exposures under "Color-Full," page 8.

INTERESTING

What will make your stereo pictures interesting? Three things are foremost. For you, your family, and your friends, the first and most important thing is that the pictures be about *them* — where they go, what they do, what happens to them.

Naturalness is next. The most interesting pictures catch people on the go, in the act, making that awful face, or doing whatever wonderful, sad, funny, or happy things they happen to do.

Stereo effect comes next. If your pictures don't have the first two, stereo can't make them good. But the stereo effect makes a good picture come alive. It gives your pictures the extra zip, extra reality that makes them seem to live again. For more about making your pictures interesting all three ways, see "Interesting," page 22.



LEVEL PICTURES

Don't tilt your camera — unless you know how, that is.

Actually, you *can* tilt your camera in any direction if you view your stereo slides in a hand viewer. Why? Because your picture will look "right" as soon as you tilted the camera for the picture. Even so, if you don't like snapshots that were tilted, you probably won't like tilted stereo shots, either. Incidentally, for various reasons, to project a tilted picture satisfactorily may be awkward, if not extremely difficult. So, if you plan to project your stereos, be especially careful about tilting your camera.



SHARP PICTURES

Steady! Take any kind of camera; give the shutter button a quick push — presto — a blurred picture! Why? You jiggled the camera when you pushed the shutter button.

To get a sharp picture, you must first hold your camera steady. Try this: Press the camera firmly against your face. Steady it with both hands. Place your right thumb under the camera. That way, when your finger presses *down* on the shutter button, your thumb will press *up* from below. To shoot, give an even *squeeze* so one push balances the other.

Set the shutter at 50 (1/50th second) for pictures when you have plenty of daylight. You must hold the camera *extra steady* if you set it at 25 (1/25th second).

Focus it right! You will probably want all of your stereo pictures to be sharp everywhere you look in them. If you have a modern stereo camera, such as the Kodak Stereo Camera, this can be easy.

SCENES
30 feet



GROUPS
9 feet

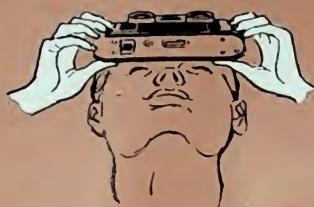


CLOSE-UPS
5 feet



ULTRA-
CLOSE-UPS





You can tilt it up



You can tilt it down



But don't tilt it sideways

In the first place, such cameras have a very wide range of sharpness. When you focus on one distance, many other distances will be in focus, too. On a bright, sunny day, if you focus at "Groups" (9 feet), everything from about 5 feet to the skyline will look sharp. You can't go far wrong even if you don't focus just right.

In the second place, your Kodak Stereo Camera has all focusing simplified. There are only three settings: SCENES, GROUPS, and CLOSE-UPS. These are all you need!

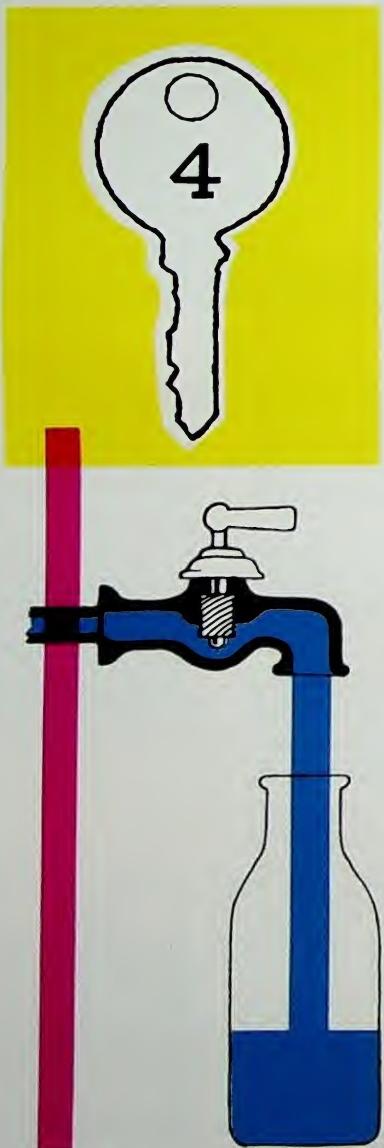
Focusing by Ranges

In daylight, when you can use a lens opening between $f/5.6$ and $f/8$ or smaller (e.g., $f/8$ or $f/11$), you can use the focus settings in the table below. To avoid distracting, fuzzy elements in the picture, important or prominent objects should not be outside the distance ranges given.



WHERE ALL THE IMPORTANT SUBJECTS ARE	FOCUS SETTINGS	
	Kodak Stereo Camera	Other Stereo Cameras
30 ft or farther from the camera	INFINITY	Inf.
10 ft or farther from the camera	SCENES	30 ft
Between 5 and 25 ft from the camera	GROUPS	9 ft
Between 3 and 8 ft from the camera	CLOSE-UPS	5 ft
Closer than 3 ft	See ULTRA-CLOSE-UPS, Page 10	

COLOR-FULL PICTURES



Exposure

Exposing a film with light is a little like filling a bottle with water. It takes a certain amount of light to expose a film correctly; it takes a certain amount of water to fill a bottle.

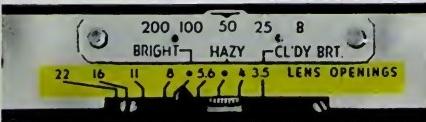
Now, you can open the faucet wide and let a lot of water into the bottle in a short time. Or, you can turn on a trickle and fill the bottle slowly. In a similar way, you can set the lens opening of your camera wide and let a lot of light in at a time, exposing the film quickly. Or, you can open it just a little and expose more slowly.

How long you let the light flow, you control with the shutter. You set it for a length of time, and it turns on and shuts off automatically.

You can get the same amount of light to the film with a number of different combinations of lens opening and shutter time: big flow, short time; or small flow, longer time. Just like the faucet filling the bottle!

But, which combinations do you use? On page 7 you learned that you should pick a small lens opening to get a greater range of sharpness for a close-up picture. You have also learned that a shutter speed of 1/50 second or shorter should be used for steady hand-held pictures. You'll read about these and other reasons on the pages that follow, and you'll learn how to form the proper combinations of lens opening and shutter speed to fill that "bottle" neatly to the brim without splatter or overflow.

Here are some of the lens openings you will find on your stereo camera:



Each opening, from $f/16$ to $f/4$, lets in twice as much light as the one to the left of it. Numbers like $f/3.5$ are about halfway between regular openings.

Here are some of the shutter times you will find on your camera:



Each time, from 200 to 25 (1/200 second to 1/25 second), lets in twice as much light as the one to its left.

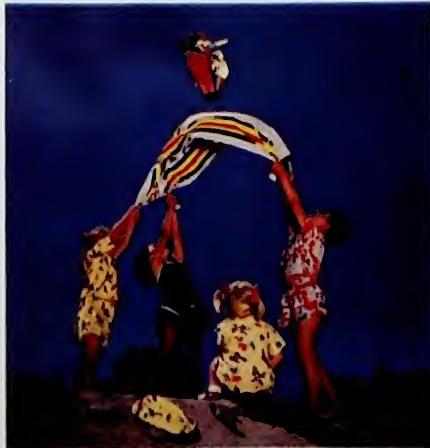
Sound complicated? Actually, it makes things simple. Let's suppose you know the lens and shutter settings for a picture — 1/50 second at $f/8$. But, suppose you want to use a shutter time half as long as recommended — 1/100

second. You're cutting the time in half, but you can make up the difference by letting twice as much light through the lens opening—in other words, by using the next larger lens opening— $f/5.6$.

All these pairs of lens openings and shutter times give correct exposure for Kodachrome Film, Daylight Type, when a light subject is in sunlight.



For slow action in sunlight: 1/50 second between $f/5.6$ and $f/8$ for Kodachrome Film, Daylight Type; 1/50 second at $f/11$ for Kodak Ektachrome Film, Daylight Type.



For fast action, use a fast shutter time and a large lens opening (check focus). In sunlight: 1/200 second at $f/3.5$ for Kodachrome Film, Daylight Type; 1/200 second at $f/5.6$ for Kodak Ektachrome Film, Daylight Type.

CAMERA SETTINGS

For Kodak Daylight Type Color Films

Type A or Type F color films can be used for pictures in sunlight or daylight if the proper filter is used over both camera lenses. For Type A films, use the Kodak Daylight Filter for Type A Color Films; for Type F films, use the Kodak Daylight Filter for Type F Color Films.

DAYLIGHT

1 Set the Shutter Speed

50 (1/50 second)

Don't change unless you have a good reason.

Good Reasons:

Dull Days — To get enough light, you may need to have the shutter open for twice as long, that is, 1/25 second; but with the shutter open *that* long, be sure to hold that camera extra steady.

Action — For snapshots of children playing or people moving about, use 100 (1/100 second). It helps "stop" the motion.

But don't forget, you're letting in only half the light, so you must use the next larger lens opening.

Fast Action — Use your fastest shutter time. Make up for it by using a much larger lens opening. See table on back cover.

2 Set the Lens Opening

According to the lighting condition

The facing page shows your *basic* lens openings for the most common sky conditions. Sunny skies can be grouped into two kinds: Bright Sunny Skies and Hazy Sunny Skies. You tell one from the other by looking at the sky and at the shadows that are nearby.

Cloudy bright skies mean less light on your subject and therefore larger lens openings. But, most stereo cameras have f/3.5 lenses so you can still take snapshots.

KODAK EKTACHROME FILM

What about Ektachrome Film for stereo pictures? It is about three times as fast as Kodachrome Film but has a more noticeable grain. The greater speed makes possible smaller lens openings and a greater range of sharpness. It gives you snapshots in dimmer light, too. If you want pictures in a hurry, you can process Ektachrome Film yourself in a few hours or have it done by a photofinisher. Eastman Kodak Company does not process it.

BRIGHT SUNLIGHT

The sun is brilliant, and the sky is bright blue. Much squinting on these days! Shadows are dark and sharp in outline. They are likely to be troublesome in close-ups. We'll tell you later how to improve on this lighting.



Ektachrome
f/11

HAZY SUNLIGHT

This is the best light for color pictures. The sun's disk is bright but softened by a slight overcast and thin clouds. You can glance at the sun without much discomfort. Shadows are light and soft in outline.



Ektachrome
f/8

CLOUDY BRIGHT

The sky is bright, but overcast with white clouds. The sun's disk is obscured and there are no shadows. The subject must be lighted by plenty of sky overhead and in front. Remember, it's Cloudy Bright, not dull!



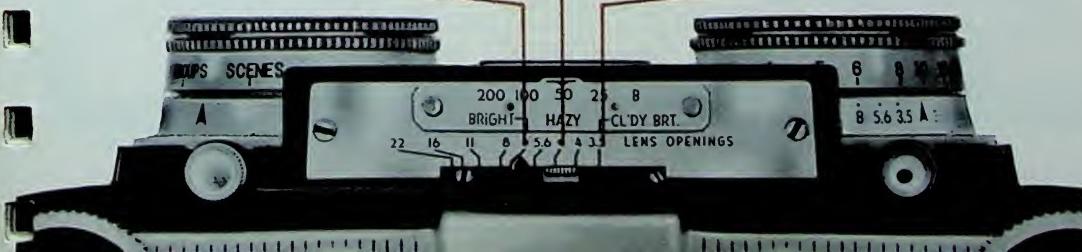
Ektachrome
f/5.6

Kodachrome
between f/5.6 and f/8

Kodachrome
between f/4 and f/5.6

Kodachrome
f/3.5

Shutter speed 1/50 at these settings



Some Sunny Day Specials

Sunny days are hey-days for stereo pictures in color. But, there are sunny days and sunny days. Actually, *hazy* sunny days give you the best pictures. Why? Because on such days, shadows are brighter.

On a clear sunny day is the common picture-taking day. And, on such days, you will probably take most pictures with your subject lighted from the front (shadow behind your subject). So, unless we say otherwise, camera settings in this book will be for *front lighting*.

But, front-lighting may not make the best picture. Shadows add depth to stereo pictures and you may therefore want to use side-lighting (shadow beside your subject) or back-lighting (shadow in front of your subject). If you do, keep this in mind: if shadows are a large or important part of a picture, they affect exposure, and you must set your camera accordingly.

IN BRIGHT SUN WITH CLEAR SKY

FRONT LIGHTING

For most pictures, front light is satisfactory but lacks depth.

For close-ups, shadows may be harsh; glare may cause squinting. To avoid squint, have your subject look slightly away from sun.

Light surroundings, like a beach, court, white house, etc., reflect light into shadows and make them brighter. Use these reflectors where you can. Or, try side lighting.



KODACHROME
1/50 between f/5.6 & f/8

EKTACHROME
1/50 at f/11

SIDE LIGHTING

Side lighting for most scenes calls for the same camera settings as front lighting.

Close-ups are different. Large shadows cover parts of your subject. You want your camera to see what's in those shadows despite the dimmer light. So, you need to use a half lens opening wider than for front-lighting. Notice how the shadows look on a side-lighted subject.



KODACHROME
1/50 at f/5.6

EKTACHROME
1/50 between f/8 & f/11

BACK LIGHTING

When back-lighted scenes are distant, use the same camera settings as for front light.

But, in back-lighted scenes where most of what your camera sees is in shadow, what is sunlit is relatively unimportant. To let your camera see well into those shadows, set the lens a whole opening larger.

Shade your lens!



KODACHROME
1/50 between f/4 & f/5.6

EKTACHROME
1/50 at f/8

Exposure Meter? For flash pictures, or for most pictures by sun, or daylight, you don't need one. But, in the various kinds of deep shade, or during the hours close to sun-up or sun-down, a meter properly used can tell you the correct camera settings. Meter settings are packed with Kodak color films.

Subject Type

Sometimes it will not be wise for you to use the basic lens openings for a particular sky condition. Why? Because some subjects are so bright that you may need to close the lens opening a little. A few are so extremely bright that you may need to set the lens a whole opening smaller than usual. If you don't make these adjustments, more light than usual will come through the lens, and your film will be overexposed. But, the changes are easy to understand and to make. Let's look.

IN BRIGHT SUN WITH CLEAR SKY

AVERAGE SUBJECTS

The camera settings in this book are for average subjects unless we say otherwise. Most subjects are average, so use basic settings when you shoot your back yard, most people, city streets, green fields the scene at the lake — in fact, most any scene without white sand or snow.



KODACHROME
1/50 between f/5.6 & f/8

EKTACHROME
1/50 at f/11

LIGHT SUBJECTS

Use a half a lens opening smaller when what your camera can see is mostly light-colored, such as distant scenery, whitish houses, buildings, beaches, courts, sunlit water, sun-bleached open fields and ranges, some snow scenes, and very fair-complexioned people close up.



KODACHROME
1/50 at f/8

EKTACHROME
1/50 between f/11 & f/16

EXTRA-LIGHT SUBJECTS

Use one full lens opening smaller when what your camera sees is nearly all white such as snow, white sand, sun-bleached light earth, deserts, arid regions, mesas, or whitestone courts or buildings. (Average subjects seen close by in these surroundings are LIGHT SUBJECTS.)



KODACHROME
1/50 between f/8 & f/11

EKTACHROME
1/50 at f/16

Close-ups

If you want to shoot close-ups, we'll have to talk a bit. Your camera will give you good stereo pictures of things as close as about 4 feet, even if you have no extra equipment. But, you must be prepared to see in your pictures what might be called "out-of-focus-it-is." Yes, wonderful though your stereo camera may be, it has a peculiarity common to most cameras. If it sees near things sharp, it sees distant things fuzzy. In stereo, this may not be pleasing.

What can you do? Fortunately, by following just these two tips, you can get good pictures anyway: Use small lens openings, and limit the distance of the background your camera can see.



Use small lens openings If you focus at CLOSE-UPS (5 feet) and use a large lens opening, such as $f/3.5$ (dull-day snapshot on Kodachrome Film, Daylight Type, at $1/25$ second) your camera will see sharply only those things from about 4 to 6 feet away. If the picture at the left were in stereo, the fuzziness in front of and behind the deer might bother your eyes.

Fortunately, if you use a smaller lens opening, the range of sharpness is much greater. At between $f/8$ and $f/11$ (sunny-day snapshot on Kodachrome Film, Daylight Type, at $1/25$), the range is $3\frac{1}{2}$ to 12 feet if you focus at CLOSE-UPS. This is much better, of course, but still not good enough for a picture like the one at the right. To get more depth:

1 Change focus to GROUPS (9 feet). Then, at $f/8-11$, the range will be from about $4\frac{1}{2}$ to 50 feet. Just make sure that nothing important is closer than about $4\frac{1}{2}$ feet.

2 Expose Kodak Ektachrome Film, Daylight Type, at $f/16$ (sunny-

day snapshot at 1/25). With a lens opening that small and the camera focused for GROUPS, the range will be 4 feet to infinity.

To use small lens openings, you need lots of light and slow shutter times. The table gives you some settings you can use for common light conditions. For other situations, see "Color-Full Pictures," page 8.

Special Backgrounds Many times you won't have light enough for a lens opening as small as you need for distant sharpness. That's when the only background your camera should see ought to be either close by or plain. In these pictures, you can't tell if the sky behind the rooster is sharp because it's uniform and distant. The sidewalk is as close as the pup's paws. Behind the baby (caught by flash), the background was distant and unlighted.



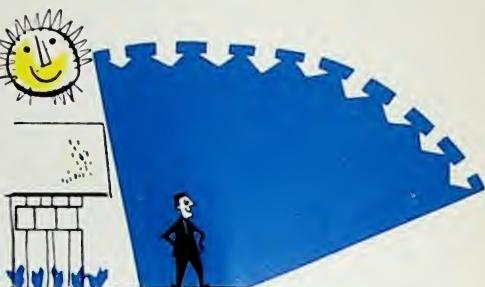
CAMERA SETTINGS AT CLOSE-UPS, OR AT 5 FEET

Type A or F Film	KODACHROME FILM Objects between 3 1/2 to 5 ft from camera	EKTACHROME FILM Objects between 3 1/2 to 5 ft from camera
Daylight Type Film	IN SUNLIGHT with subject front lighted 1/25 second* between f/8 and f/11	1/25 second* at f/16
	IN SHADE OR DIM DAYLIGHT Indoors or out 1/25 second* between f/11 and f/16 with No. 5B or 25B flash lamp	1/25 second* at f/22 with No. 5B or 25B flash lamp
Type A or F Film	NO DAYLIGHT, but NORMAL HOME LIGHT IS OK 1/25 second* at f/16 with No. 8 flash lamp	1/25 second* at f/22 with No. 8 flash lamp

*Hold camera extra steady at this slow shutter speed.



SHADE AND SHADOWS



Open shade — Although the sun is shining, your subject is in a cast shadow, lighted only by the sky above and in front.

What do you do when the sky is blue but a cloud drifts over the sun? Or, suppose little Suzie is in the shade next to the house, or under that big tree in the yard?

If *you* are in the shade but shooting a scene that is sunlit, set your camera for the sunlit scene: 1/50 second between f/5.6 and f/8 for Kodachrome (1/50 second at f/11 for Ektachrome). But, don't expect that people standing nearby in the shade will look good in the picture. To get them, you have to expose for the shade. Shade? What kind of shade?

When a cloud drifts across the sun, and the sky is blue or has some clouds here and there, use 1/25 second between f/4 and f/5.6 for Kodachrome, or 1/25 second at f/8 for Ektachrome, *for subjects in the cloud's shadow*.

Open shade—that's when your subject is shaded by a house, tree, etc (but not actually *under* anything), and a good wide arc of bright sky is looking down at him. At 1/25 second, use f/3.5 for Kodachrome, or f/5.6 for Ektachrome.



Camera set for sunlit scene
silhouettes girl. This looks
O.K. in stereo.



Camera set for shade, fo-
cused on girl gives fuzzy,
too-light background.



Camera set for shade;
background cut off.
O.K. in stereo.



A narrower arc of sky means less light and, therefore, wider lens openings.



Trees or roof overhead will reduce skylight more. Use flash. This is not open shade.

Deep Shade—If your subject is actually *under* something, say a porch or tree, flash is your best bet. If you can't use flash, try 1/25 second at f/3.5. With Ektachrome it will probably be enough exposure; with Kodachrome . . . it will be a nice try anyway.

For all shade pictures without flash, hold your camera extra steady (shutter at 1/25 second). Shoot from where your subject will have a near background — a distant one will look fuzzy! This cuts the stereo effect, but gives an acceptable picture.

In shade with blue flash — If your subject is shaded but is part of a generally sunlit scene, 1/25 second at f/3.5 may properly expose your subject even though the sunlit scene beyond will be badly overexposed. To this problem, flash gives you an easy way out.

Stand in the shade and shoot out toward the sunlit scene. Focus on GROUPS (9 feet). With a No. 5B or 25B (blue) flash lamp in your flash unit, stand from 5 to 7 feet away, and set your camera shutter at 1/25 second. Then, for Kodachrome, set the lens between f/8 and f/11; for Ektachrome, use f/16. Now, shoot. The shutter and lens are set to properly expose the sunlit background. At the distances given, the flash should properly expose your subject.

If necessary, you *can* shoot with flash from the sunlight into the shade (it isn't as good), but get 12 feet away from the nearest sunlit person.

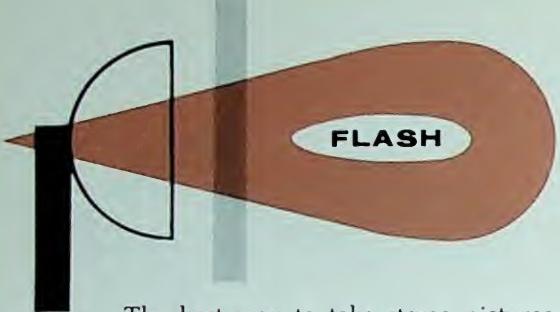
Back light plus blue flash — With sunlight back-lighting your subject, you can make beautiful portraits with blue flash. Set the shutter at 1/25 second and the lens between f/8 and f/11 for Kodachrome, or at f/16 for Ektachrome. Then, with a No. 5B or 25B lamp in your flash unit, shoot from 7 to 12 feet away. These settings balance the sunlight and the flash.



Blue flash at 5 to 7 feet balances shaded subject with sunlit background.



Blue flash at 7 to 12 feet gives beautiful quality to back-lighted shadows.



The best way to take stereo pictures indoors is by flash. Flash produces lots of light. This lets you use small lens openings, and gives you a large range of sharpness. So, focus for GROUPS, unless you're inside 4 feet. Modern stereo cameras are built for flash, so choose a lamp recommended for your camera and film, fasten on the flash unit, and you're ready.

Flash Alone

With the flash unit on your camera, the basic question to ask is this: *How far is it from the flash to my subject?* If you're mathematically minded, you divide a guide number (given in the instruction sheet packed with the film) by this distance, and that gives you the lens opening for your shot. Without the math, the table opposite gives you the lens openings for various distances. Kodak Flashholders have a similar table right on the flash reflector.

Flash Plus Daylight

You can take beautiful portraits near windows by supplementing the daylight with a No. 5B or 25B (blue-coated) flash lamp. Pose your subject by the window, but out of direct sunlight. Set your camera shutter at 1/25 second. With Kodachrome Film, Daylight Type, set the lens opening at f/8; with Kodak Ektachrome Film, Daylight Type, between f/11 and f/16. Focus on GROUPS (9 feet), and shoot from 6 to 8 feet from the subject. The illustration on page 20 shows you the type of effect you'll get.

Improvements

Many times indoors you may be taking pictures in rooms that are small or have white or nearly white walls. In such rooms much of the light from the flash lamp that might be lost in a larger or darker room ricochets off the walls and ceiling to your subject. This light does two things: It brightens the shadows so that you get a more pleasing picture, and it boosts the total light a bit so that you should allow for the increase. So, when shooting in such rooms, set the lens half a lens opening smaller than the guide number or table indicates. For instance, in the table it says that at 10 feet you should ordinarily use f/8 with No. 5 or 25 lamps. Change to a lens opening between f/8 and f/11 in such rooms.

Be Careful—Get the Right Bulbs!

You can get into trouble with flash by being careless. The most common mistake is to use the wrong lamp. Check your camera manual *before* you buy lamps. Your camera may be built to use only one kind. The Kodak Stereo Camera uses SM, SF, No. 5, 25, 5B, 25B, and 8 lamps at specified shutter times.

The next most common trouble is poor batteries. Weak batteries may flash a lamp too late or not at all. Batteries designed for flash are best, but even these should be checked monthly and replaced if weak. Even better is the new power-storing system called "B-C." A B-C flash cell, such as the Kodak B-C Flashpack, takes the place of two "C" batteries and ends power worries for a long time.

Another, but less common, mistake is to use the wrong color of lamp for color pictures. Clear (water-white) flash lamps are for Type A or F films *only*. Blue-coated lamps are for Daylight Type films *only*.

LENS OPENINGS FOR DAYLIGHT TYPE COLOR FILMS

Use blue-coated lamps only	Shutter speed in seconds	Lamp-to-Subject Distance in Feet								
	1/25	4	6	8	10	12	14	16	18	20
Kodachrome No. 5B or 25B	1/25			f/11 f/8	f/5.6	f/4 f/3.5				
Ektachrome No. 5B or 25B	1/25			f/22 f/16	f/11	f/8		f/5.6		f/4

LENS OPENINGS FOR KODAK TYPE F COLOR FILMS

Use clear lamps only	Shutter speed in seconds	Lamp-to-Subject Distance in Feet								
	1/25	4	6	8	10	12	14	16	18	20
Kodachrome No. 8	1/25			f/11 f/8	f/5.6	f/4 f/3.5				
No. 5 or 25	1/25			f/16	f/11	f/8		f/5.6		f/4
Ektachrome No. 5 or 25	1/25			f/22 f/16	f/11	f/8		f/8		f/5.6
No. 8	1/25			f/16 f/11	f/8		f/5.6	f/4	f/3.5	

In these tables, the distance from lamp to subject in feet (white number) is connected by a black line to the lens setting (brown number) you should use. If line goes between numbers, use an "in-between" lens setting.

For a complete listing of flash guide numbers, combined with convenient exposure calculators and other information and devices, see the handy pocket-size Kodak Master Photoguide, sold by Kodak dealers.

SF or SM flashlamps can be used with Type F films if the camera lenses are covered with Kodak Wratten 82B filters. The guide number for 1/25 second is 55.

These tables are for 4- to 5-inch polished (Luma-clad) reflectors.

If you prefer to use flash guide numbers, you will find them in the instruction sheets packed with Kodak film.



Parties or Groups by Flash

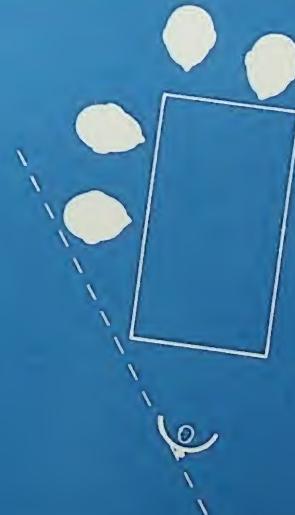
The beam from a flash reflector is slightly brighter near the center. Whoever is in the center of the beam gets the most light if a group of people are arranged in a row, firing-squad fashion. But, how many times are people arranged that way? Not often. Usually, some are close by, some farther away. The diagram shows how to shoot if that is the case. Aim your camera so that the closest person is at the very edge of the picture, or turn your flash unit so that only the edge of the beam will strike that person. To figure your lens opening, use $1\frac{1}{2}$ times the distance of that person.



The corner of a white walled room reflects light from several different directions into the shadows cast by a single flash.



To catch candles (or Christmas-tree lights), shoot flash with camera held firmly on tripod or table. Set shutter at "B" or "T."



INTERESTING PICTURES



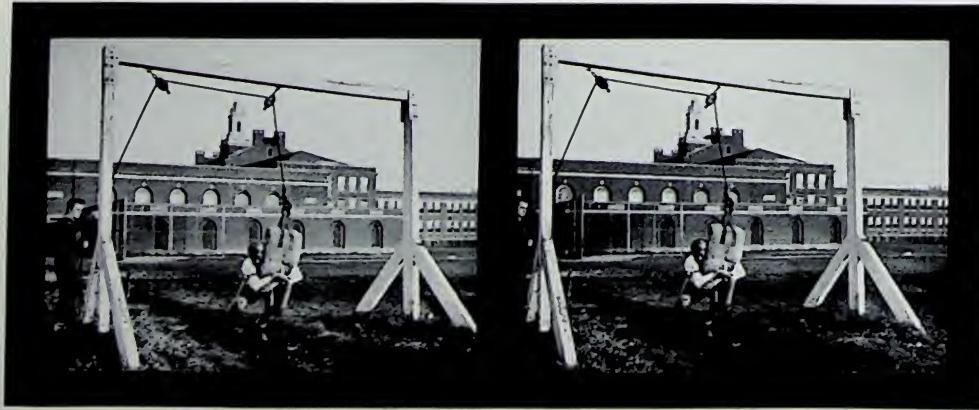
If there is a No. 1 tip on good stereo pictures, this is it: Trust your eyes! Your camera sees very much as you do. Chances are, then, that if you like what you see, you'll like what your camera "sees" from the same viewpoint.

Before you have taken very many pictures, you'll discover a thing that may puzzle you. Some pictures give you a deep dimensional feeling; others give you nearly none. Shouldn't they all be the same?

Not at all! Some subjects look "deep," some look "flat," whether they really are or not. In stereo pictures you will want to catch all the depth there is, and perhaps even exaggerate it when there isn't much. How can you do these things? Before we tell *how*, let's take a quick look at *why*.

The picture pair below shows the differences in the views that might be seen by right and left eyes looking at this football practice session. Notice in each view where the dummy, the rope, and the frame seem to be when compared with the building. It is these differences in view that give you your sense of depth when you look at such a scene, or at a pair of pictures like this.

But, your right and left eyes do not see different views at *all* distances. If you look at something farther away than about 100 feet, your two eyes will see about the same. Try looking at a tree or chimney a good distance away. Pick one that has nothing between it and your line of sight. By looking with first one eye, and then the other, you will see that both eyes see the same view. You will see that you get little or no sense of depth. But, you will also see that even under these conditions, a two-eyed view is better.



THIS IS IMPORTANT, SO LET'S SUM IT UP. The nearer things are, the greater your sense of depth; the farther things are, the smaller your sense of depth. Two-eyed effects are very strong up to a distance of about 10 feet, still strong at 25 feet, but gradually fade away beyond 50 feet. Nevertheless, even the most distant scenery looks better with two eyes.

Now, let's see how knowing these things, you can get better stereo pictures.

Give your camera some "depth" to look at. This may sound silly. It's a stereo camera, isn't it? But, you can reduce or increase stereo effect by your choice of viewpoint.

A common mistake is to line people up close to a house, tree, bushes, or some other background that fills the camera view. The camera can't see anything farther away. Result: little stereo effect. Cure: let the camera look along or past nearby things. But, suppose a wall limits the view — as sometimes happens indoors — and no "angle" shot is possible? You can then get good stereo effect by including a person or object nearer to the camera than the principal subject.

When you can shoot so that some figures overlap others, do it. Overlapping is a clue to depth that does not depend on binocular vision, but it adds much to the effect.



1



2



3



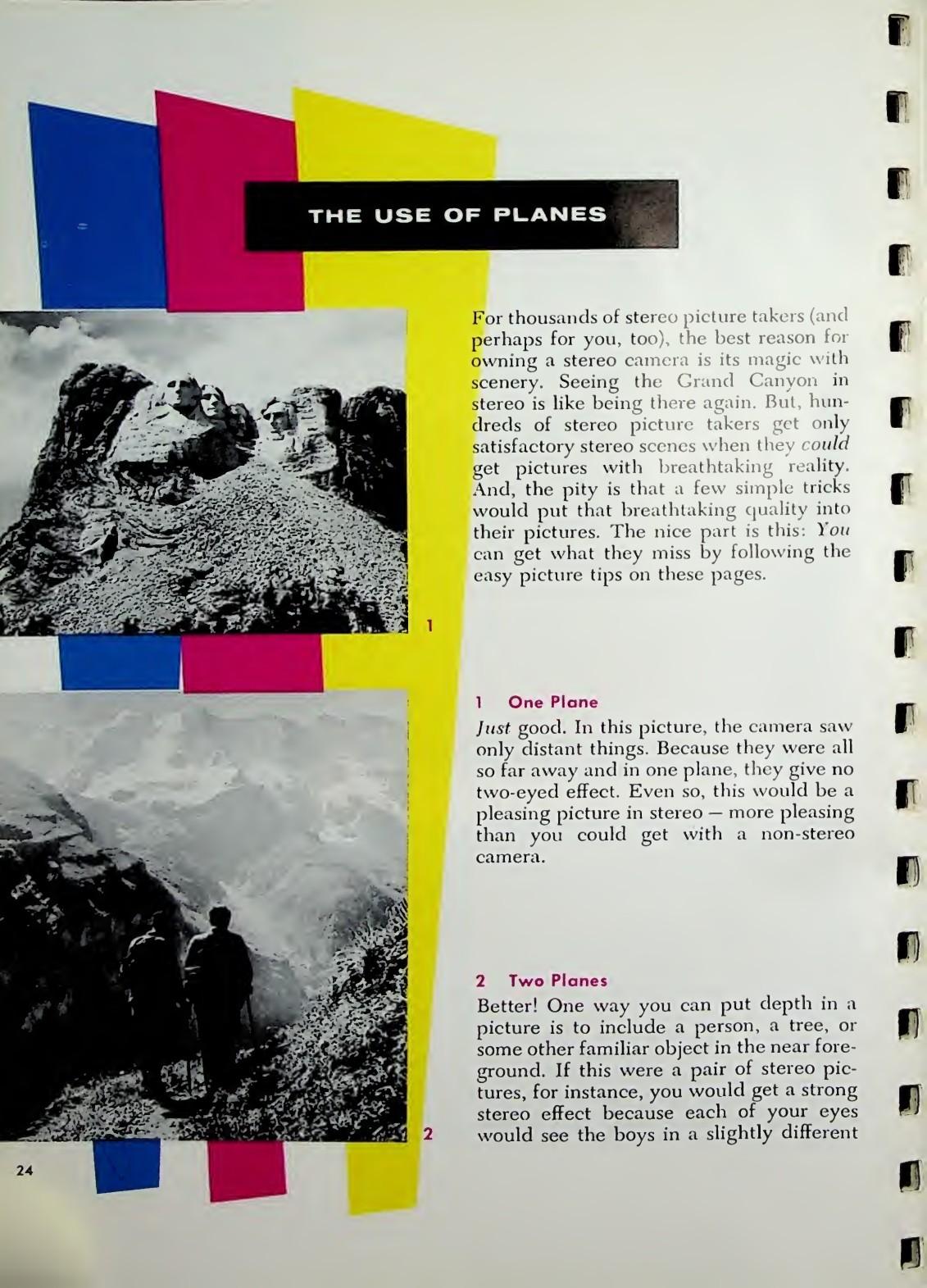
4

1 Not so good. The fellow and girl are side by side, both the same distance from the camera. The tree cuts off the view. So, this scene has little stereo effect.

2 Better. The fellow and girl are at different distances. The background is full of interesting things at various distances from the camera.

3 Here the figures do not overlap, and the stereo effect would be relatively slight. Furthermore, the background is plain and close by, preventing stereo comparisons.

4 Here the figures do overlap so that, even in this single-lens picture, more depth can be seen. In addition, the background is distant so that the two-eyed comparisons can be made.



THE USE OF PLANES



1



2

For thousands of stereo picture takers (and perhaps for you, too), the best reason for owning a stereo camera is its magic with scenery. Seeing the Grand Canyon in stereo is like being there again. But, hundreds of stereo picture takers get only satisfactory stereo scenes when they *could* get pictures with breathtaking reality. And, the pity is that a few simple tricks would put that breathtaking quality into their pictures. The nice part is this: You can get what they miss by following the easy picture tips on these pages.

1 One Plane

Just good. In this picture, the camera saw only distant things. Because they were all so far away and in one plane, they give no two-eyed effect. Even so, this would be a pleasing picture in stereo — more pleasing than you could get with a non-stereo camera.

2 Two Planes

Better! One way you can put depth in a picture is to include a person, a tree, or some other familiar object in the near foreground. If this were a pair of stereo pictures, for instance, you would get a strong stereo effect because each of your eyes would see the boys in a slightly different

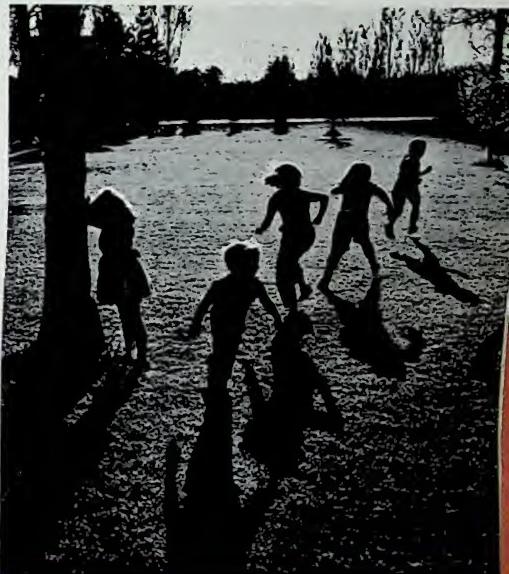
position against the distant background. The nearby figures give a stereo effect even in this single lens picture. In addition, the haze makes the mountains look far away, and the back lighting separates the boys from the brighter background.

3 Many Planes

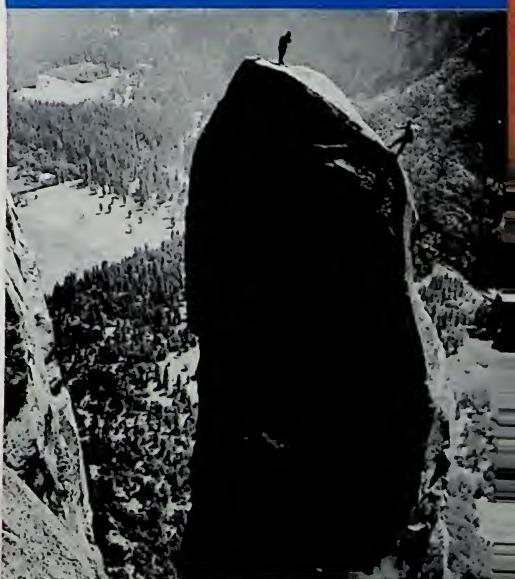
Much better. You can get the most depth in a scene by shooting it like this. Include not just one nearby object, but many objects at various distances all the way out to the horizon. Here, there is not only the boy in the near foreground, but there are the tree and little girl a few feet farther away; other boys and girls, each at a greater distance; and the road and trees in the background . . . all close enough to give some two-eyed effect.

4 Height and Depth

Some of the most disappointing pictures people make (even in stereo) are of deep gorges, high buildings, etc. They seldom give an impression of the actual height or depth of the scene. But you can catch that impression beautifully in stereo by including foreground, middle ground, and distance—like this. The foreground cliff adds tremendously to the depth even in this single-lens shot.



3



4



Converging lines in a picture give a very strong stereoscopic effect. You will find them very often in scenes where man has been at work. *Where* you take such pictures *from* is very important. Naturally, you get the greatest effect by shooting from where most converging lines can be seen. But, there is another effect, too. Strong lines at the edge of a picture catch your eyes and lead them in. Open spaces let your eyes wander away. So, when you shoot a converging-line picture, shoot so that the lines begin at the picture's foreground edge.

THE USE OF CONVERGING LINES

Both of these are converging-line pictures. But, you can see that the paper-roll shot gives the stronger stereo effect. This is because it has more converging lines and because those lines start at the very edge of the picture. They capture your eyes at once. In the tree scene, your eyes can escape between the edge of the picture and the first trees. Convince yourself! Cover this picture from bottom and sides up to the trees, and see how much more effective it is.



Size is important to a stereo effect. This is especially true when the principal subject is not a familiar one. If you were taking a shot of an ocean liner, for instance, you might include a car or some people nearby. Look how well the two climbers show the size of "the needle" (page 25).

You know that the farther away familiar things are, the smaller they appear. Your eyes depend very strongly on this kind of clue to distance. In scenes, the apparent sizes of houses, trees, cars, and people are all-important, so include them whenever you can.

In the top picture, the tower looks tall. The doorway gives a nearby frame with a strong stereo effect. But, it is the size of the people and other *familiar* things that really tells you something about how mammoth the



THE USE OF SIZE COMPARISONS

tower is and how far away. Here, too, the distant haze tells your eyes the tower is far off, and the horizon even farther.

Here is another tower, pictured from a different kind of viewpoint, but an interesting one in stereo. Here you are given several clues to position and shape, but you are lost. The picture lacks a very important clue . . . size! You sense that it is big, but how big? What is needed is a human figure, a car, or some other familiar object for you to judge by. Imagine that a man is standing on the base-ledge and looking down at the camera. You can imagine either a very small figure and an enormous tower, or a larger figure and a much smaller tower. Either way, it would be a better stereo picture.

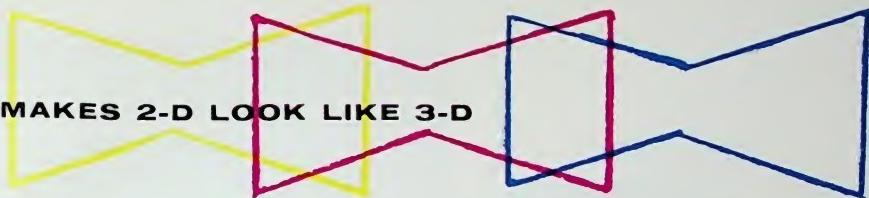




Everyone makes mistakes. You can make yours pay off in better pictures by doing a little "Monday-morning quarterbacking" when you look over your pictures. After you see what went wrong, say to yourself, "What I should have done was . . ." And, next time, do it!

TROUBLE	PROBABLE CAUSE
Picture looks blurred all over	Jiggled camera. Re-read page 6.
Picture looks bleached out	Overexposed. Try smaller lens opening (page 11).
Picture looks too dark all over	Underexposed. Try larger lens opening (page 11).
Picture looks too blue all over	Types A and F films used in daylight need a filter — see exposure tables.
Flash picture looks too yellow all over	Daylight-type films need BLUE-coated lamps.
Pictures are not mounted	Were you supposed to pay a mounting fee? Were perforations torn? Did pictures overlap?
There is an object in front of your subject in one picture	What you see through the viewfinder is not quite what is seen by the lens to the right or left of it. So, something very close can cut off the view of one lens without your knowing it. Cure: Check the view from an inch or so each side of the point from which you plan to shoot.
Only one picture	You probably took the picture too close to the beginning of the roll. Check your camera manual to see how far film should be advanced before the first exposure.
Red eyes in flash pictures	This is a reflection from blood vessels of the inner eye. Try using the flash unit further from the lens, turning on more room lights, and having subject look slightly away from camera.

WHAT MAKES 2-D LOOK LIKE 3-D



When you look at a nearby object, each eye sees a different view. Your right eye sees farther around to the right side of the object, your left eye, farther around to the left. (Look again at the picture on page 22.) The differences give you your sense of depth.

The distance between the centers of the pupils of your eyes is about $2\frac{1}{2}$ inches. So, if you take separate pictures of an object from two points about $2\frac{1}{2}$ inches apart horizontally, the picture taken from the left will represent the left eye view, and the one from the right, the right eye view. If you now look at those two pictures arranged so your left eye sees only the left picture, and your right eye only the right, the two pictures will be combined by your brain into a single picture almost as if you were looking at the original scene.

This is about what happens in stereo photography. The lenses of your Kodak Stereo Camera are about $2\frac{1}{2}$ inches apart. The color transparencies (pictures) are mounted so that in the viewer, your right eye sees only the right picture, and your left eye only the left.

Looking at Stereo Pictures

When you look at something normally your eyes focus (accommodate) and converge simultaneously, and there is a certain degree of accommodation and convergence for each distance. But, in looking at stereo pictures, this is not so. Then, your eyes accommodate (focus) on one distance, and converge on another. They focus on the picture in the viewer or on the screen; they converge at the apparent distance of the object you happen to be looking at in the picture. Because your eyes are not accustomed to doing these two things separately, you may not be able to see "depth" the first time you look at a stereo picture. But, unless your eyes are very unusual, you will be able to do so by adjusting the focus and eye-spacing. Incidentally, many authorities agree that looking at stereo pictures is good for the eyes.

The angle at which you hold a viewer is important. If you took the picture with the camera tilted, you may feel you have to tilt the viewer to the same angle that you tilted the camera.

And, what about projection of your stereo pictures. Well, if you've been to a 3-D movie, you know that you have to wear special glasses, that you can't tip your head to one side, and that the figures of people around you disturb the stereo effect. Nevertheless, a hand viewer lets only one person at a time enjoy a picture, so if you need to show your slides to groups, a projector seems the only answer. If that is necessary, you may want to do your own slide mounting, as many projectionists feel they must.

**KODAK
STEREO
CAMERA**



**KODASLIDE
STEREO
VIEWERS**

Fast, $f/3.5$ color-corrected, Lumenized lenses and a Scopesight Viewfinder give you beautifully sharp slides. Simplified focusing, and semi-automatic exposure selector makes camera settings easy. In other words, here is an accurate-eyed dream of a camera you only have to use once to fall in love with. Surprisingly low in price, too.

Features: Viewfinder gets you pictures as you see them. Located between the lenses, it gives you beautifully clear, parallax-free viewing. Built-in spirit-level lets you know at the very moment you take the picture that your camera is horizontal.

Shutter is synchronized for most popular flash lamps. Speeds include "Bulb," 1/25th, 1/50th, 1/100th, and 1/200th. Advancing the film automatically sets the shutter.

Loading is fast — no threading necessary.

Exposure Selector makes choosing the right outdoor camera settings no more difficult than deciding whether the day is clear, hazy, or cloudy.

Lens openings $f/22$; 16; 11; 8; red dot (approx. 6.7); 5.6; black dot (approx. 4.7); 4.0; and 3.5 give versatility and convenience.

The lifelike beauty of your stereo color slides will be vivid in either the Kodaslide Stereo Viewer I, or II.

The Stereo Viewer II has fine color corrected, double element lenses. Made for 110-volt operation, it can be converted to

battery operation with two batteries and a flashlight bulb. Brightness control knob varies the light to suit the subject. Has eye-width adjustment, focusing control, and takes all standard stereo mounts. Moderately priced.

The Stereo Viewer I is similar to the Viewer II but is lower in price, and designed for battery operation. It has single element lenses, eye-width adjustment, focusing control, and can be converted to 110-volt operation by the purchase of the inexpensive Kodaslide Stereo Viewer Converter, Model A.

Kodak Standard Flashholder: For the Kodak Stereo Camera and other Kodak cameras with built-in flash contacts. A sturdy unit with a brilliant, Lumaclad reflector, this flash holder uses midget lamps and either regular batteries or the Kodak B-C Flashpack.



Some Facts About Kodak Stereo Equipment

CAMERA

Focal Length of Lens: 35 mm

Frame Separation: 2.805 inches*

Separation of Optical Axes: 2.759 inches*

Size of Exposed Picture: .915 inch wide by .984 inch high

*Lines from frame centers through lens centers cross at about 7 feet.

MOUNTS

Size of Mounted Picture: .830 inch wide by .930 inch high

Aperture Centers: (separation of points 5½ feet away)
2.436 inches

Film Centers: (separation of points 7 feet away)
2.450 inches

Infinity points: 2.496 inches

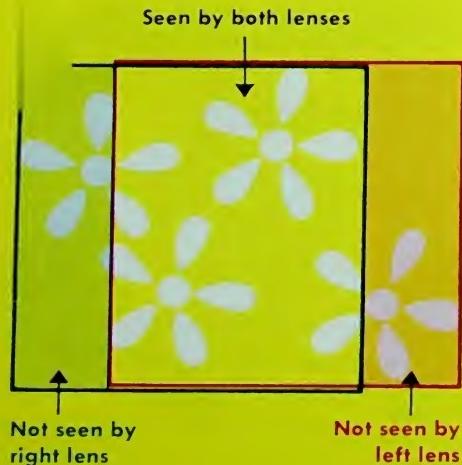
VIEWERS

Focal Length of Lenses: 46 mm (Model I)
42.85 mm (Model II)

Interocular Range: 61.5 to 72 mm (approximately 2.4 to 2.8 inches)



ULTRA-CLOSE-UPS



Without special lenses, your stereo camera can probably be focused for pictures as close as about four feet, but no closer. To move in much closer than that, you need a close-up lens over each of your camera lenses. Unfortunately, however, close-up lenses don't solve all the problems.

The lenses of your camera point straight ahead. As a result, when you aim your camera at something only a few inches away, the right lens sees things to the right of where you aim, and the left lens, things to the left. At 13 inches (a common ultra-close-up distance), only about two-thirds of what one lens sees can also be seen by the other. Since stereo effects depend on the two lenses seeing the *same* things, only about two-thirds of each picture is good for stereo. What is worse, when you look at such a pair of pictures, your eyes object to being asked to "fuse" what is in one slide but not in the other.

The simplest way to overcome this difficulty is to mask the pictures on the stereo



slide. What you do is stick black tape (Kodak Binding Tape) over the outer edge of each picture. This works out fairly well for pictures taken at 30 inches (with a Kodak Portra Lens 1+) when you need mask off only $\frac{1}{8}$ inch of each picture, or even at 19 inches (Portra Lens 2+) when you need to mask off $\frac{3}{16}$ inch. But, for pictures at 13 inches (Portra Lens 3+), you must mask off $\frac{1}{4}$ inch and will have only a little over half of each picture left.

To overcome this difficulty, and also to reduce "stereo exaggeration," most stereo ultra-close-ups are made with special devices (some sold in camera shops) which, in effect, move the two lenses closer together. Exaggerated stereo becomes bothersome in close-ups because your eyes remember so well the apparent size and shape of small, familiar things. It occurs partly because the focal length of the viewer lens is greater than that of the camera lenses. At ordinary picture distances, however, this slight exaggeration is usually welcomed.

Using one of these devices, you take a picture first through one lens, covering the other. Then, you shift the camera so that the unused lens is near where the first one was and shoot again, this time covering the first lens. How far you shift the two lenses toward each other depends on the device and the nearness of your subject. The nearer, the greater the shift.

A simple wooden jig (see illustration at right) that permits you to pivot the camera can be made in half an hour by anyone who can use a saw and bit. It not only corrects the "window," but allows you to aim each lens at your subject — one at a time, of course — so that stereo effects are somewhere near normal. Plans for this jig and the details of its use can be obtained without cost by writing the Sales Service Division, Eastman Kodak Company, 343 State Street, Rochester 4, New York, for *Stereo Close-Ups*, Kodak Pamphlet No. C-19.



SUNLIGHT • Daylight Type Color Films

		Kodachrome	Ektachrome
Bright sun with strong shadows in front lighting	1/50	Between f/5.6 and f/8	f/11
	1/100	Between f/4 and f/5.6	f/8
	1/200	f/3.5	f/5.6
Bright sun with strong shadows in side lighting	1/25	f/8	Between f/11 and f/16
	1/50	f/5.6	Between f/8 and f/11
	1/100	f/4	Between f/5.6 and f/8
Hazy sun with faint shadows	1/25	Between f/5.6 and f/8	f/11
	1/50	Between f/4 and f/5.6	f/8
	1/100	f/3.5	f/5.6

FLASH at 1/25 second shutter speed

	Kodachrome				Ektachrome			
Daylight Type Color Films with Blue Lamps								
Flash Lamp	4½ ft	6	9	12	4 ft	5½	8	11
No. 5B or 25B	f/11	8	5.6	4	f/22	16	11	8
Type F Color Films with Clear (Waterwhite) Lamps								
Flash Lamp	5 ft	7	10	14	4 ft	6	8	12
No. 8	11	8	5.6	4	16	11	8	5.6
No. 5 or 25	16	11	8	5.6	22	16	11	8

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